Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1.   (Currently Amended) A method for generating a thumbnail image, comprising:

discarding data of a portion of lines of an original image of an original document; ~~and~~

combining data not discarded to generate the thumbnail image corresponding to the original ~~image.~~image;

identifying the portion of lines to be discarded based on a y_position value and a y_increment value;

selecting pixels in lines not discarded that are within a neighborhood from a current x_position value and an x_size value;

combining values of selected pixels to generate a value of a current pixel of the thumbnail image;

including one or more pixels in a first neighborhood that are within a boundary corresponding to the current x_position value and a position corresponding to a sum of the current x_position value and the x_size value;

generating a next current x_position value for a next pixel of the thumbnail image by:

adding the x_increment value to the current x_position value corresponding to the current pixel of the thumbnail image, or

adding the y_increment value to a current y_position value corresponding to the current pixel of the thumbnail image and setting the next current x_position value to an x_start value if a sum of the x_increment value and the current x_position value exceeds a line_width value, or when an x_count value of reduced size pixels

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exceeds an x_count_limit value, the x_count value being a pixel number in a current line of

the reduced size image;

including pixels in a next neighborhood that are within a next boundary

corresponding to the next current x_position value for the next pixel of the thumbnail image

and the next current x_position value corresponding to a sum of the current x_position value

and the x_size value; and

using repeatedly a last pixel when positions corresponding to the sum of a

value of the current x_position value and the x_size value exceed a position of a last pixel in

a current line of the original image.

2-4.   (Canceled)

5.   (Currently Amended) The method of ~~claim 3~~claim 1, further comprising:

setting the boundary to include pixels of the original image that has a position

that is at most half a distance between adjacent pixels from the current x_position value, and

to include pixels of the original image that has a position that is less than half the distance

between adjacent pixels from a position of the current x_position value plus an x_size value.

6.   (Currently Amended) The method ~~of claim 2~~claim 1, further comprising:

setting a number of selected pixels to be a power of two;

summing into a sum the selected pixels; and

binary shifting the sum by an exponent of the power of two to generate the

current pixel of the thumbnail image.

7.   (Currently Amended) A method for generating a reduced size image,

comprising:

discarding all data spanned by a portion of one or more first dimensions of a

plurality of dimensions that span an original image of an original document;~~and~~

combining data not discarded to generate a reduced size image corresponding

to the original ~~image.~~image;

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identifying the portion of the first dimensions based on one or more first

position values and one or more first increment values, one first position value and one first

increment value corresponding to each of the first dimensions;

identifying the data not discarded based on the first position values, the first

increment values, second position values and second increment values, each pair of the

second position and increment values corresponding to one of second dimensions which are

the plurality of dimensions other than the first dimensions;

selecting data points of the data not discarded that are within a neighborhood

from a current position value corresponding to the first and second position values; and

combining selected data points to generate a current data point of the reduced

size image;

including one or more data points in a first neighborhood that are within a

boundary corresponding to the current position value and a position value corresponding to a

sum of the current position values and corresponding size values, one size value

corresponding to each of the second dimensions;

generating next current position values for a next data point of the reduced size

image by:

adding the second increment values to the current position values

corresponding to the current data point of the reduced size image in the second dimensions, or

adding the first increment values to the current position values

corresponding to the current data point of the reduced size image in the first dimensions and

setting the next current position values in the second dimensions to start values corresponding

to the second dimensions if a sum of the second increment values and the current position

values exceeds width values corresponding to any of the second dimensions, or when a count

value in one of the second dimensions of reduced size pixels exceeds a corresponding

count_limit value, the count value being a next data point position in a current line of the reduced size image; and

including data points in a next neighborhood that are within a next boundary corresponding to the next current position and a position value corresponding to a sum of the current position values and the corresponding size values; and

replicating last data points in any of the second dimensions when respective position values corresponding to the sums of the current position values and the corresponding size values exceed position values of last data points in respective dimensions in the original image.

8-10.   (Canceled)

11.   (Currently Amended) The method of ~~claim 9~~claim 7, further comprising:

setting the boundary to include data points of the original image that has a position value that is at most half a distance between adjacent data points from the current position value in any of the second dimensions, and to include data points of the original image that has a position value that is less than half the distance between adjacent data points from a position value set by any one of the current position values plus a corresponding size value in any of the second dimensions.

12.   (Currently Amended) The method of ~~claim 8~~claim 7, further comprising:

setting a number of selected data points to be a power of two;

summing into a sum the selected data points; and

binary shifting the sum by an exponent of the power of two to generate the current data point of the reduced size image.

13.   (Currently Amended) An apparatus, comprising:

an interpolator;

a position controller coupled to the interpolator;

one or more position values couple coupled to the position controller, the

position controller discarding all data in an original image of an original document spanned

by a portion of first dimensions of a plurality of dimensions that span the original document

by processing the position values to skip over discarded data, and the interpolator combining

data not discarded to generate a reduced size image of the original image.image;

first increment values;

second increment values;

the position values including first position values and second position values,

wherein the position controller:

identifies the portion of the first dimensions based on the first position

values and the first increment values;

identifies the data not discarded based on the first position values, the

first increment values, the second position values and the second increment values, each pair

of the first position and increment values corresponding to one of first dimensions, each pair

of the second position and increment values corresponding to one of second dimensions

which are the plurality of dimensions other than the first dimensions;

selects data points of the data not discarded that are within a

neighborhood from a current position value corresponding to the first and second position

values, and

combines selected data points to generate a current data point of the

reduced size image;

size values, one size value corresponding to each of the second dimensions,

wherein the position controller:

includes one or more data points in a first neighborhood that are within

a boundary corresponding to the current position value and a position value corresponding to

a sum of the current position values and corresponding size values,

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generates next current position values for a next data point of the

reduced size image by:

adding the second increment values to the current position

values corresponding to the current data point of the reduced size image in the second

dimensions, or

adding the first increment values to the current position values

corresponding to the current data point of the reduced size image in the first dimensions and

setting the next current position values in the second dimensions to start values corresponding

to the second dimensions if a sum of the second increment values and the current position

values exceeds width values corresponding to any of the second dimensions, or when a count

value in one of the second dimensions of reduced size pixels exceeds a corresponding

count_limit value, the count value being a next data point position in a current line of the

reduced size image; and

including data points in a next neighborhood that are within a

next boundary corresponding to the next current position and a position value corresponding

to a sum of the current position values and the corresponding size values; and

the position controller using repeatedly respective last data points in any of the

second dimensions by keeping the current position value at the last data points when position

values corresponding to the sums of the current position values and the corresponding size

values exceed position values of the last data points in respective dimensions in the original

image.

14-16. (Canceled)

17.   (Currently Amended) The apparatus of ~~claim 16,~~ claim 13, the position

controller setting the boundary to include data points of the original image that has a position

value that is at most half a distance between adjacent data points from the current position

value in any of the second dimensions, and to include data points of the original image that

has a position value that is less than half the distance between adjacent data points from a

position value set by any one of the current position values plus a corresponding size value in

any of the second dimensions.

18.   (Currently Amended) The apparatus of ~~claim 15~~claim 13, the interpolator:

obtaining a power of two of selected data points;

summing into a sum the selected data points; and

binary shifting the sum by an exponent of the power of two to generate the

current data point of the reduced size image.

19.   (Canceled)

20.   (Original) A xerographic marking device incorporating the apparatus of claim

13.

21.   (Original) A marking device incorporating the apparatus of claim 13.

22.   (Original) A digital photocopier incorporating the apparatus of claim 13.

23-26. (Canceled)